

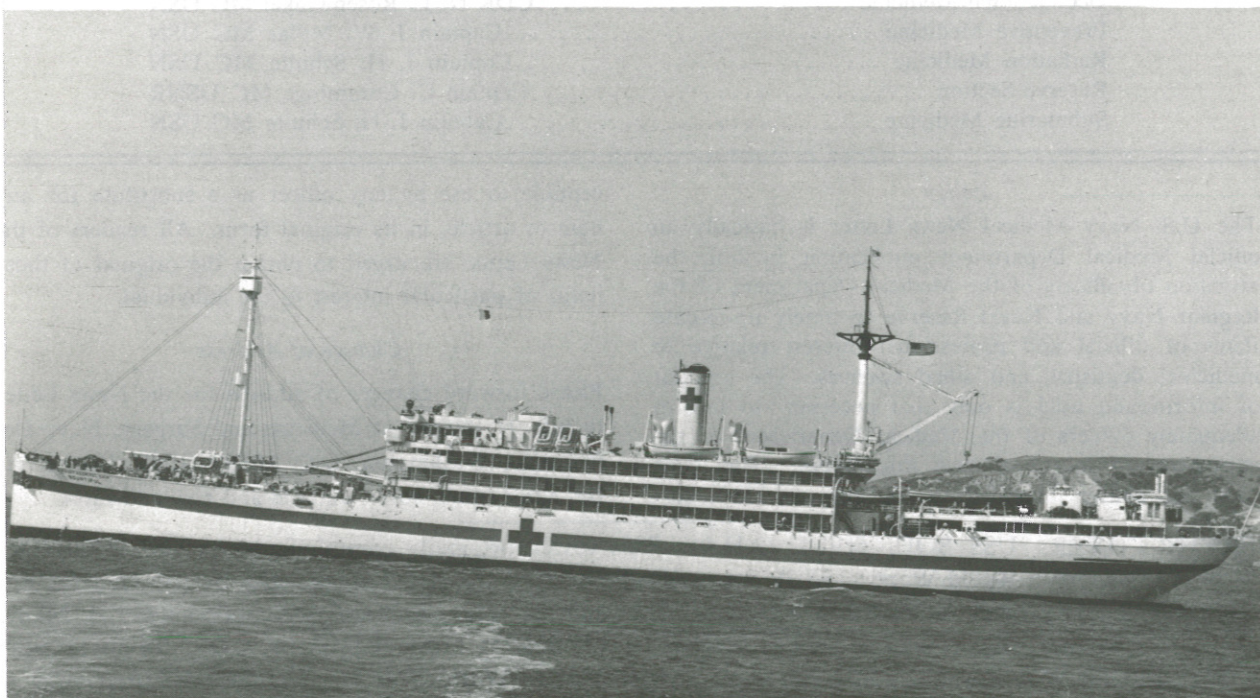
UNITED STATES NAVY

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United States Navy
MEDICAL NEWS LETTER

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, sus-

ceptible to use by any officer as a substitute for any item or article, in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

Change of Address

Please forward changes of address for the News Letter to Editor: Bureau of Medicine and Surgery, Navy Department, Washington, D.C. 20390 (Code 18), giving full name, rank, corps, and old and new addresses.

FRONT COVER: USS BOUNTIFUL (AH-9). This vessel, originally commissioned as USS HENDERSON, a transport in World Wars I and II, was converted into a 500-bed hospital ship by the General Engineering and Dry Dock Company of Oakland, California in late 1943 and recommissioned 23 March 1944. The Medical Department personnel attached to this floating hospital probably cared for more fresh battle casualties than any other hospital ship's complement in World War II. The BOUNTIFUL was at various separate times under the operational control of the Third, Fifth and Seventh Fleets, and handled casualties during the invasions of Saipan, Guam, Palau Islands, Philippine Islands, Okinawa, and Iwo Jima, and during the Japanese occupation. She also rendered the fleet valuable services at Ulithi in the Carolines and in other Pacific areas.

This ship of mercy traveled over 65,000 miles embarking, treating, and evacuating patients to fixed hospitals in combat areas or in the United States. She evacuated 7,458 patients from battle areas including 864 convalescents; and as a transport on two trips carried 1,000 patients between Hawaii and San Francisco. She spent 145 days in active service with American fleets she was assigned to support in the Pacific. Her Senior Medical Officer's report stated that the deaths aboard amounted to only 1.39 percent of the casualties received. There were 5,635 outpatient consultations during the period from March 1944 to August 1945; and 2,881 surgical operations, including 1,665 orthopedic operations. Of the injuries cared for it is of interest to note that 517 were head injuries, 41 spinal, 449 chest, 352 abdominal, 243 burns, 823 fractures, and 45 major amputations.

After the war the BOUNTIFUL served as station hospital at Yokosuka, Japan from 24 November 1945 to 27 March 1946. She provided medical support for the atomic bomb tests at Bikini Atoll in the Marshall Islands during June and July 1946. She was decommissioned 13 September 1946 and stricken from the Navy List 29 October 1946.

The issuance of this publication approved by the Secretary of the Navy on 4 May 1964.

FEATURE ARTICLE

RESEARCH OPPORTUNITIES FOR THE FIELD MEDICAL OFFICER IN TIME OF WAR

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Most physicians in the field are aware that advances in medicine classically occur during wartime. The majority, however, have little sense of their own role in making such medical progress. It seems pertinent, therefore, to remind the busy field medical officer during this time of conflict of this responsibility and of his unique opportunities.

The initial excitement of caring for the sick or injured from a combat zone characteristically soon yields to the inexorable demands of service routine. Imperceptibly even the more alert military physician loses insight into the unique professional experience that characterizes his new practice. On his first day ashore the sharp eye of the tourist (in or out of uniform) with his camera at high-port is alert to the quaint color of a new country. Two weeks later, jaded by routine, he may, with camera sheathed, pass many more colorful scenes without bothering to record them. So, too, after an initial interest, the professional acuity of the physician is dimmed for what is unique in his wartime practice.

Reasons for such an attitude are easy to identify. Most physicians are unaccustomed to performing clinical research. They conceive of research as only possible in specifically designated research centers, equipped with complicated instruments and manned by highly trained specialists. Most practicing physicians, therefore, don't identify their own role or opportunity in making clinical contributions. Designated research units have been very productive during past wars, but it is well to remember that many important advances in military medicine have come from lower echelon medical officers on independent duty. Paří, as a battalion surgeon, ran out of the currently accepted essential ingredients for treating war wounds and found that they healed without meddlesome pharmacologic interference. So, too,

did Desault and Laré as young military officers make their classical contributions without the benefit of an established research unit.

The neophyte military surgeon in an unfamiliar professional environment is properly hesitant in suggesting radical changes for casualty care. He can, however, contribute by careful, critical analysis of his unique clinical experience. Contrary to the image given research by the science writer, progress does not consist of a series of serendipitous dramatic breakthroughs. It usually is the logical extension of known facts into areas of ignorance. It is achieved by critical numerical evaluation of a defined experience. As with most endeavors, sustained hard work is the most important ingredient for success. A smattering of good luck and intelligence improves the odds.

Faced with a novel clinical environment and professional instructions, which perforce under military conditions are arbitrary in tone, the ordinary military physician is discouraged from trying to make an original contribution. Digesting the recorded experience is formidable, much less venturing an original contribution. Only those who dare to engage in research appreciate how thin is the veneer of truth that protects most clinical dogma. Indeed, there often is an inverse correlation between the factual basis and the degree of empiricism with which a pronouncement is declared.

Assuming the active duty wartime medical officer can be alerted and energized to apply his efforts towards clinical research, where best should he turn his talents? As in drilling for oil, there are some areas more likely to be productive than are others. Where should the neophyte start his wildcat exploration in depth?

One area of certain investigative promise concerns diseases peculiar to the geographic region involved in the conflict. Current interest in falciparum malaria is typical of how a well recognized but largely neglected tropical disease yields to modern investigative techniques. Similarly, medical conditions which are unique to the tactical situation are in general a rich source of potential study. A current example is "rice paddy foot," a term used to describe the disabling maceration that accompanies prolonged water immersion. Such clinical conditions may have no peacetime counterpart but are frequently of enormous military importance—a fact of particular significance to the career military medical officer.

A third potentially productive area involves conditions of trauma that are uniquely influenced by the tactical military situation. In Vietnam, widespread use of the helicopter, complete air superiority, and placement of well staffed hospitals immediately adjacent to combat zones makes possible resuscitation and definitive surgical care within an unprecedented short period of time following wounding. Almost any numerically valid observations on these patients will constitute a significant investigative contribution.

Although the classic epidemic of wounds that constitutes war has commonly signaled dramatic medical advances, the fundamental discoveries are usually made during peacetime. Their clinical application is often realized during war. Development of penicillin and the atomic bomb are classic examples. The military medical investigator seeking a field for productive effort thus is well advised to identify areas in which there has been significant recent

advances and to apply them to the current military situation.

Problems under current study in civilian casualty management form another rich source of research potential for the military surgeon. For example, the use of dextran, mannitol, bicarbonate, or Tham for resuscitation provides a ready made project for the military surgeon. So too may he profitably evaluate mechanical devices or surgical techniques pertaining to casualty management: examples are mechanical respirators, pH meters, measurement of central venous pressure, blood gas analysis or vascular surgical techniques.

Even from this brief summary, it is apparent that an enormous number of potential areas of meaningful investigation exist for the military medical officer during time of war. He needs only be alert, critical, and be willing to expend more time and energy than is required in pure patient care. Above all he must be willing to collect quantitative data from his experience to back up his clinical impressions. Such simplification does not inappropriately degrade research by pretending that basic investigation does not require elaborate equipment and supporting facilities. During wartime, however, so many unique clinical opportunities are available to the military surgeon that he does disservice both to himself and to his profession if he does not remain alert to this potential. Perhaps a reminder will stimulate some of the many superbly trained clinicians in the field to take advantage of this rich opportunity which heretofore has remained unnoticed in his military practice.

MEDICAL ARTICLE

CURRENT ATTITUDES ON DIVERTICULITIS WITH PARTICULAR REFERENCE TO COLONIC BLEEDING

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In the first edition of his authoritative text on diseases of the colon (1923), Lockhart-Mummery stated that "... while a history of a slight amount

of (rectal) bleeding is common in cancer, it is usually absent in diverticulitis." This was the standard teaching at that time, and a history of bleeding, certainly in the presence of an obstructive lesion of the distal colon, was believed to be more strongly in favor of carcinoma than of diverticulitis. Further, diverticulitis did not readily come to mind as a likely

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diagnosis when a patient presented with unheralded hemorrhage in the absence of any obstructive symptoms.

How very different are the views current today. Noer and his colleagues (1962), in an analysis of 245 patients who presented with rectal bleeding, decided that in 62 of these patients the cause was diverticulitis. Fallis and Marshall (1950) went so far as to say that "... occult blood in the stools is common in our experience. It is just as frequent in diverticulitis as in carcinoma. . . ."

What is the reason for this change in outlook? Does it result from a more thorough search for the cause of rectal bleeding or of more precise methods of examination by sigmoidoscopy or by radiology? If so, have these investigations resulted in such an accumulation of data as to justify the more frequent diagnosis of diverticulitis as a cause of rectal bleeding? Does the evidence available on this score justify a frequent resort to surgical resection as a means of stemming the blood loss?

It is, of course, not unreasonable to expect that diverticula might bleed. The view is widely held that they develop as protrusions of the mucous lining through the wall of the gut, along points of apparent weakness in the muscle coat, where it is pierced by the larger terminal ramifications of the mesenteric arteries. The linear disposition of diverticula and their position in relation to the tenia support this suggestion, as do x-ray studies of injected specimens. Further, microexamination of diverticula reveals very frequently the presence of relatively large vessels not far separated from the mucous lining.

In diverticulitis, it is assumed that inflammation beginning in the mucosa extends through the wall of the diverticulum and leads to a wide variety of pericolic abscesses and fistulae. It would be not unreasonable to assume that during this process of burrowing infection, vessels might be eroded and cause overt bowel hemorrhage, which could properly be regarded as secondary type.

At the same time, however, it is important to remember that the natural history of diverticulitis is slow and, under these circumstances, one might reasonably anticipate the timely development of a protecting endarteritis going on ahead of the infective process. It is certainly uncommon for bleeding, minor or major, to accompany diverticulitis with extensive complicating fistulae or abscesses.

However, despite these inconsistencies in the argument, we admit that it would seem not too unreasonable to expect to find bleeding (and that too of a major degree) not too uncommonly in diverticulitis.

Does this imply that there is likely to be some acute, localized and rapidly progressive process of ulceration which erodes into an arteriole in the absence of any earlier infection and in the absence of any endarteritis?

However, even when we admit that diverticula might bleed, we must also admit that diverticula are very common. Kocour (1937) and Morton (1946) showed that diverticula were evident in 5% to 6.5% of all autopsies. It follows then, that investigation of the colon in the presence of bleeding will often reveal diverticula, and that this may represent no more than a chance association. The relevance of this observation is clearly apparent in considering other lesions. For example, carcinoma of the colon was reported to be associated with diverticulosis in 1.7% to 8% of all cases (Kocour, 1937). Bruce (1960) stated that 12% of patients have diverticulosis and carcinoma associated. Peptic ulcer was seen in 7.25% of all patients with diverticulosis (Kocour, 1937). With this very much in mind, we should, in the individual case, examine the evidence very closely before accepting diverticula displayed as the cause of the bleeding, and before directing our attention only towards their treatment.

It has often seemed to us that diverticulitis features as a cause of rectal bleeding with unjustifiable frequency, and our experience would incline us to the view expressed by Lockhart-Mummery quoted in our opening paragraph.

It was in such a frame of mind that we decided to look at the available writings on this topic, in the hope that a critical review of the evidence might guide us to the truth in deciding on this important matter.

Before we become too involved in nomenclature, we feel we must pause for a moment to indicate what is our glossary. Often we find ourselves in great difficulty in deciding whether or not we should talk of diverticulitis or diverticulosis. If the colon is examined and is shrunken, tender, or complicated by abscess or fistula, we are happy to commit ourselves to the term diverticulitis. All too often, however, our diagnosis is based on an x-ray film and we may favor diverticulosis to diverticulitis in the absence of local tenderness, fever, or of any other signs or symptoms of infection.

It is often difficult to decide when a diverticulum has become so modified by infection as to merit its promotion (or demotion) into the diverticulitis group. It is apparent from our reading on this subject that other writers share our difficulties, for many fail to make it clear whether they are talking of

diverticulitis or diverticulosis. It seemed to us allowable to assume that in most patients who have diverticula which are causing symptoms of one sort or another, there must surely be some measure of infection and for this reason we have elected throughout to speak of diverticulitis. However, if at any time in preparing our argument we wish to suggest that no significant infection was present clinically or pathologically, we will, without apology, use the term diverticulosis.

What Firm Evidence Is
Available Concerning the
Observed Occurrence of Bleeding
Originating in Colonic Diverticula?

At Sigmoidoscopy.—We have been able to find in the recent literature only one instance of bleeding from the ostium of a diverticulum as observed through the sigmoidoscope, despite the fact that many diverticula will be found within the range of a 25 cm instrument. Smith in 1951 observed bleeding from the inferior margin of a large sigmoid diverticulum.

For this lack of reports there may be several explanations: that hemorrhage from diverticula may in fact be a most unusual happening; that even when it is noted, it may not be considered an important enough observation to merit its being put on record; or that it is not surprising that bleeding has not often been noted coming from a diverticulum, since it is an unusual event on sigmoidoscopy to see the openings of any diverticula, even when the presence of many has earlier been demonstrated radiologically.

When one considers that in the presence of rectal bleeding, especially when it is brisk, the surgeon will be inclined to make a meticulous and searching examination, and that the reported incidence of bleeding as a complication of diverticulosis or diverticulitis of the colon is not inconsiderable, it is a matter of surprise that the actual bleeding point does not appear to have been noted more frequently.

As Observed at Colotomy.—Here again, there are astonishingly few reports of the occurrence of bleeding when the colon is opened and the ostia of the diverticula are inspected from within. It is true that this infrequency could again be explained in the following ways: that it truly relates a low incidence of bleeding; that operation is not always undertaken during active bleeding but may be deferred until hemorrhage has stopped and done then as a proce-

dure of election; recognizing that diverticula may affect a long segment of the intestine and that the actual level of bleeding is a matter of conjecture alone, a diligent search for the precise localization might involve making several colotomy openings. It is often easier to accept a presumptive diagnosis and to do a blind resection of the obviously affected segment of bowel.

We have been able to trace only three reports of bleeding from this cause as detected at colotomy. Bleeding was observed from the ostia of diverticula at the splenic flexure by Quinn (1961), the transverse colon by Maynard and Voorhees (1956), and at the hepatic flexure in the case report by Weingarten et al (1959).

From Pathology Specimens.—Here again the answer is "very seldom." Perhaps this is not surprising. Diverticula are very numerous and although there may be evidence from the outside, they are often remarkably difficult to display from the lumen. The careful inspection of each may imply a time-consuming and diligent search with ironing out of the folds (especially if one is dealing with a fixed specimen) and flattening of the circular lumen. Moreover, we may be searching for a lesion which is so small as to be inconspicuous and all too easy to overlook, especially if it is hidden, as it is likely to be, in the recesses of a dark diverticulum. It may be too tedious and unprofitable a task to the pathologist; perhaps he loses heart and makes only a token inspection and is content to make a longitudinal cut along the length of one diverticulum to prove the diagnosis.

Or is the finding of the actual bleeding point such a commonplace that he believes there is no point in recording it? But if it is such a common happening, should we not expect, all too often, to find a diverticulum full of blood, or from time to time, a tell-tale worm clot appearing in the ostium or drawing attention to its presence by an accumulation of coagulated blood in the lumen?

Salgado et al (1961) reported a case of rectal hemorrhage in the presence of diverticulosis and hypertension. The hemorrhage was massive and immediate surgery was required. The operative specimen when examined showed many diverticula, some were inverted and from the orifice of one diverticulum a thrombus was observed. The wall of this diverticulum was indurated, inflamed, and the pericolic fat was quite adherent. There was no macroscopic ulceration; however, serial microscopic

sections eventually revealed an area of healing ulceration. In the bed of the ulcer there was a medium sized artery with a defect in its wall filled with fibrin clot.

Rosenberg and Rosenberg (1964) demonstrated erosion of granulation tissue and of a moderate sized artery in the base of a diverticulum in a patient with massive rectal bleeding.

Slack (1962) reviewed operative and autopsy specimens of 177 colons with diverticulosis. He stated that ". . . in the series of surgical specimens, twelve patients had complained of intermittent rectal bleeding, but in only four of the specimens was ulceration of the diverticula found; of these specimens granulation tissue was seen with open ended blood vessels in the walls of the diverticula." There was only the scantest reference to the clinical features of these patients.

When a Diagnosis of Bleeding From Diverticulitis Is Made, How Successful Is Treatment?

If the cause and source of the bleeding can be established with precision, and the affected length of colon is resected, there should of course, be no recurrence and our patient should be able to count on a trouble free future. However, just how often these happy circumstances prevail, we have found difficult to establish.

Much more frequently (and the evidence for this we have already cited in earlier paragraphs) the diagnosis of diverticulitis is confirmed, but the actual point (or points) of bleeding cannot be established. There is now little alternative to the resection of the segment of bowel affected by diverticulitis, in the hope and belief that the offending lesion will be included in the resected area. This is an operative approach, little different in its principle from the blind gastrectomy which was until recent times sanctioned in the treatment of severe continuing gastric hemorrhage when the actual site of bleeding could not be established. However, just as blind gastrectomy exposes the surgeon to the infrequent but bitter disappointment of continuing bleeding from the proximal gastric remnant, so colon resection for diverticulitis incurs a similar risk, again on the score of a potentially incomplete operation. Diverticulitis is usually a diffuse disease, and although very often one segment of the intestine (and this most often the sigmoid) is most seriously compromised, there are often other diverticula scattered widely in the

colon. This state of affairs poses a nasty dilemma for the surgeon who is planning a resection aimed to arrest urgent bleeding. Since an operation which would encompass every single diverticulum, might imply a very wide (or even total) resection, most surgeons are inclined, under such circumstances, to remove only that length of colon which is most seriously involved and to run the risk of a recurrence from the persistence of a potential bleeding point elsewhere in the colon. At this stage, he may find himself in the unhappy position, first of having been unable to establish the point of bleeding, and secondly of the pathologist having been similarly unsuccessful in demonstrating it. If now there is a recurrence, he is in even greater difficulties, for he has now to entertain three possibilities: that the diverticulum responsible for the bleeding was left behind, that there was some alternative source of bleeding which he overlooked, or that the new bleeding point is due to a second (or third) source of bleeding in another diverticulum.

It will be evident that a surgeon can find himself confronted with a very difficult state of affairs and a lot of questions which all too often remain unresolved.

Any consideration of the success of treatment in bleeding from diverticulitis by operation is far too often confounded by the lack of precise information.

With these points in mind let us now try to answer the question posed at the beginning of this section. There is a marked disparity in the recorded incidence of the recurrence rate of rectal bleeding associated with diverticulitis. In many reports the case histories are poorly documented and there is an inadequate follow-up. Such results as are available are set out in Tables 1 and 2. The situation as we see it at the moment is as follows:

Patients treated by operation: (a) When the bleeding point is established. In the few recorded cases where the point of bleeding has been determined with confidence at operation or has been demonstrated later in the pathological specimen, the outcome has always been excellent. We have, however, been able in the literature to trace only a handful of such patients. (b) When the bleeding point is not established. This pertains in the great majority of instances. The rate of recurrence of bleeding in this group as recorded in the literature is about 5% which is interesting in relation to the recurrence rate which prevails in the patients who are managed expectantly without operation (as set out below, about 24%) (Tables 1 and 2).

TABLE 1.—Incidence of Recurrence of Rectal Bleeding

Author	Ref No.	Treatment	Duration of Follow-Up, Comments	Total No. Patients	Recurrence Patients
Fraenkel	36	Conservative	? Massive hemorrhage	2	0
Hubbard	37	Resection	?	1	0
Keith and Rini	14	Conservative	4 to 10 years Massive hemorrhage	10	2
Kunath	38	Conservative	?	1	0
		Resection	Massive hemorrhage	1	0
Maynard	9	Resection	Massive hemorrhage	1	1
Quinn	8	Conservative	1 year	88	30
Ross and Eddy	15	Conservative	½ to 1 year	16	2
		Resection	Massive hemorrhage	4	0
Rushford	20	Conservative	5 years	31	1
		Resection	5 years	1	0
Welch et al	26	Resection	?	30	1
Total				186	37

TABLE 2.—Incidence of Recurrence of Rectal Bleeding (Summary of Table 1)

Treatment	Total No. Patients	No. of Re- currences	% of Re- currences
Conservative	147	35	24
Surgical	39	2	5

Patients treated conservatively: Keith and Rini (1957) reported 19 patients with massive colonic bleeding, all managed conservatively. Ten were followed for 4 to 10 years and only two had further bleeding. The number of recurrences reported by Ross and Eddy (1960) out of a group of 76 patients was only two. (The follow-up period, however, varied from one month to five years).

Although this evidence is based on only relatively small numbers, the results of conservative and operative treatment (Table 2) suggest that surgical resection does reduce the incidence of recurrence of rectal bleeding.

The Cause of Recurrence of Rectal Bleeding Following Surgery.—When there is a recurrence of bleeding following a surgical resection of colon for hemorrhage believed to be coming from a diverticulum, is there any recorded evidence to show to what it is attributable?

In the majority of patients subjected to operation for bleeding believed to be due to diverticulitis, the

diverticula are discovered in the sigmoid colon. Although they are most numerous in this segment of the bowel, there are, however, often others scattered diffusely along the whole length of the distal (or even proximal) colon. Since resection for bleeding usually involves sacrifice only of the distal portion of the left side of the colon, there must very often be diverticula left behind in the remaining portion of colon. It is not surprising then, that recurrence is most often attributed to failure to remove all of the diverticula and the mistake is condoned for the very good reason that it would seem reasonable to restrict the resection and to incur this risk, rather than to extend the resection too widely and to leave the patient crippled by loss of all the colon.

Recurrence of bleeding suggests to the more discerning that the initial diagnosis was, in fact, a wrong one and encourages a more diligent search for some alternative. On going over the ground again, all too often some other pathological lesion, coexisting with diverticula, will be discovered and proved by its later treatment to be the real devil in the piece. Stone (1944) reported a group of 72 patients with rectal bleeding. Of these patients he found: twenty-one with a definite cause (other than diverticulosis or diverticulitis) for their rectal bleeding. Twenty had associated pathology which could not be proved as the source of bleeding (seven of these patients had only diverticulitis). Thirty-one had no demonstrable pathology.

TABLE 3.—*Incidence of Mild Bleeding* *

Author	Ref No.	Comments	Total No. Patients	No. with Bleeding	Incidence, %
Boyden	39	Diverticulitis	34	3	9
Colcock and Sass	30	Diverticulitis	50	11	22
Dunning	40	Macroscopic bleeding	249	35	14
Fallis and Marshall	3	Occult bleeding	99	39	41
Fraenkel	36		46	10	22
Goodwin and Collins	41	Diverticulitis	726	145	5
Greig	42		24	3	13
Hoard and Bernhard	18	{ Diverticulitis	111	42	37
		{ 31 with only			
		{ occult bleeding			
		{ Diverticulosis	236	39	16
Keith and Rini	14		317	60	19
Knight	19		{ 185	20	12
			{ 104	33	32
Le Royer and White	43		200	32	16
Mayo and Blunt	44		202	17	8
Mobley et al	45	Diverticulitis	1,970	145	7
Morhous	46	Occult bleeding	274	55	5
Rankin and Brown	47		200	39	17
Rushford	20		120	33	27
Spriggs and Marxer	48		58	3	5

* Percentages are taken to the nearest figure. In some cases either percentages or number of patients with bleeding were calculated from the available figures.

Twelve specimens of sigmoid colon containing diverticula were reviewed by De Cosse (1957). All of these patients had symptoms of diverticulitis and all had experienced rectal bleeding. In the twelve patients, he found: six patients with multiple sigmoid polyps, four patients with diverticula only, and in incidental findings on review, one patient with duodenal ulcer and one patient with hemorrhoids.

The importance of this high incidence of associated pathology is further considered below.

Incidence of Rectal Bleeding in Diverticulitis.—We feel up to this point from a general review of the literature that there is remarkably little evidence on which to prove the case that diverticula are a common cause of rectal bleeding. But if there has been only a very limited amount of evidence which could be regarded as incontrovertible, what other evidence, circumstantial or inferential, is available to justify the figures of 15% to 20% incidence of bleeding in diverticulitis, so often cited in contemporary writings on the subject?

The first difficulty which one encounters is that very often a clear distinction is not made between

macroscopic bleeding as reported by the patient and occult bleeding as discovered by the benzidine or guaiac tests. Except where it has been clearly stated that the bleeding was occult we have made the assumption that bleeding, in this context, implies the passage of blood which is recognized by the patient or by his attendant. It is, however, relevant to note at this point that in the series reporting the highest percent of incidence of bleeding in diverticulitis (namely, Hoar and Bernhard (1954)—37% and Fallis and Marshall (1950)—41%) emphasis was in the first, partially, and in the second, wholly, on the presence of occult bleeding.

Most writers on the subject of bleeding in diverticulitis make a point of classifying it as mild or massive, and although it has not often been clear to us

TABLE 4.—*Incidence of Mild Bleeding (Summary of Table 3)*

Total number of patients	5,205
Total number with hemorrhage	794
Average incidence, %	15

TABLE 5.—Incidence of Massive Bleeding *

Author	Ref No.	Total No. Patients	Patients With Bleeding	% Incidence
Dunning	40	249	9	4
Earley	49	456	23	4
Fraenkel	36	46	6	13
Hartley	22	158	17	9
Keith and Rini	14	317	19	6
Knight	19	185	7	4
		104	7	7
Mayo and Blunt	44	202	1	1
Ross and Eddy	15	420	19	5
Welch et al	26	114	3	22(<i>sic</i>)

* See footnote to Table 3.

just how considerable bleeding must be before it deserves the epithet massive, there does seem to be some merit in classifying hemorrhage in this way.

In this section we have attempted a summary of the current literature concerning the frequency with which patients with diverticulitis suffer rectal bleeding assumed to be caused by the diverticulitis.

Mild Hemorrhage.—The nature of blood passed per rectum may vary from flecks of bright blood to altered blood of a varying degree (Knight (1957)). None of the features of the second group are present.

It will be seen from the accumulated published experience of the authors set out in Tables 3 and 4 that the average incidence of rectal bleeding of a total of over 5,000 patients with diverticulitis of the colon was 15% with a range from 5% to 41%. Rushford (1956) calculated an incidence of 17% from 6,000 cases.

Massive Hemorrhage.—The criteria applied to this group are quite difficult to establish. Some authors use the rate of blood loss, some the fall in blood pressure, and others the amount of blood required for resuscitation of the patient. In a general way we are thinking of a patient in whom the scale of blood loss was of such a degree that urgent admission to hospital was required.

In this collected series of over 2,000 patients, the average incidence was 5% (Tables 5 and 6).

Management

It is evident from our own experience that diverticulitis may cause rectal bleeding. However our

review of the recorded experience of its incidence in this condition leads us to believe that the commonly accepted figure of approximately one in seven is, on the available evidence, too high.

Acceptance of this view will, of course, materially affect our management of the individual case. In particular, it will incline us to search very diligently for other pathological lesions and to the acceptance of diverticulitis as the cause, only when we have no better alternative.

Massive Hemorrhage.—When bleeding is urgent and continuing, there can be no place for time-consuming investigations. The patient's condition seldom allows a radiological examination, and sigmoidoscopy is undertaken only under the very greatest difficulties.

Before seriously considering operation, however, we should bear the following points in mind.

(1) There is a natural tendency for the bleeding to cease spontaneously. Meantime resuscitation with whole blood may require 1 to 6 liters (Cate (1953), Hartley (1964)). Keith and Rini (1957) found that an average of over 2 liters were needed. Occasionally repeated transfusion may be required,

TABLE 6.—Incidence of Massive Bleeding
(Summary of Table 5)

Total number of patients	2,251
Number with massive bleeding	111
Incidence, % (Average)	5

Rosenberg and Rosenberg (1964). Continuing brisk hemorrhage constitutes a serious problem for many of these patients are elderly and do not tolerate rapid blood loss.

(2) Recurrence of bleeding following conservative management is unusual in this group of patients. Keith and Rini (1957) reported 19 patients with massive colonic bleeding all treated conservatively. Ten were followed from four to ten years and only two had a further episode. Ross and Eddy (1960) treated 16 patients with massive hemorrhage conservatively, and in a follow-up which varied widely, from one month to five years, found only two who bled again.

It seems likely, therefore, that the majority of patients will suffer no further episodes of bleeding (Table 2).

(3) Although it is true that the bleeding point may be found at operation undertaken for urgent bleeding, this is in fact a most unusual happening. In Table 6, a total of 111 patients has been collected, all of whom had massive colonic bleeding. If we add to this number, the 32 set out in Tables 7 and 9, yet not included in Table 5, we have a total experience of 143 patients with massive colonic bleeding. Yet the bleeding point has been identified in apparently four instances only.

(4) There is some evidence that the incidence of

bleeding is directly related to the extent of the disease (Hartley, 1964). In other words the longer the segment of colon involved, the greater is the likelihood of complicating hemorrhage. This is, however, scant comfort to the surgeon, for this knowledge invites resection of a longer rather than a shorter segment of colon in a sick patient, who is all too often old and frail into the bargain. (It is not our intention in this review to discuss the various techniques of management of the colon by clamps, or by other devices, in the hope of narrowing down the point of bleeding to at least short segment of the colon. It is, however, our impression that none of the methods holds out promise of a dividend sufficient to offset the additional morbidity which their use invites.)

(5) In choosing between operative and conservative management the most important consideration will be the comparative morbidity and mortality of the two methods and their respective cure rates. It is, however, possible to get a measure of only mortality figures and these are set out in Tables 8 and 10.

The mortality rate of 32% recorded in the surgical group compares very unfavorably with that of 8% which attends nonoperative management. However, it should be borne in mind that surgery is likely to be offered only to those patients with severe exsanguinating hemorrhage. We have not been able,

TABLE 7.—*Results of Surgery for Massive Hemorrhage*

Author	Ref No.	No. Patients	No. Survived	Comments
Cate	21	1	1	Young patient
Earley	49	7	6	Most had only colostomy
Hartley	22	3	1	Survivor had laparotomy only Deaths followed colectomy
Hoar and Bernhard	18	4	1	Mickulicz, 2; colostomy, 1; colec- tomy, 1
Kunath	38	2	2	Colostomy
Noer	34	6	4	Deaths followed colectomy
Noer et al	2	11	7	Surgery varied from colostomy to total colectomy
Rosenberg and Rosenberg	12	1	1	Total colectomy
Ross and Eddy	15	4	4	
Welch et al	26	1	1	Sigmoid colectomy
Young and Howarth	50	1	0	Total colectomy

in the literature, to trace any recorded series treated conservatively or surgically by simple random selection, presumably because of the difficulty first of establishing a control group and secondly of collecting together a sufficiently wide clinical experience.

(6) There seems to be a much sounder basis for the diagnosis of bleeding from diverticulitis of the colon when the hemorrhage is massive than when it is only mild or moderate.

The only recorded cases of actually identified bleeding points at operation were all patients with massive colonic hemorrhage. The records of colonic specimens removed for so called bleeding diverticulitis reveal only a handful of cases in which demonstrable erosion of moderate sized blood vessels was evident. All of these patients suffered massive colonic hemorrhage.

Scarborough (1958) and Scarborough and Klein (1948) have made clear that in the group of patients with mild bleeding presumed to be from diverticulitis there is a large proportion of patients with associated pathology which they conclude to be the source of blood loss in view of these three facts: that the bleeding point has been recorded at operation in patients with massive colonic hemorrhage but not in those with mild bleeding; that pathology specimens of colons affected with diverticulitis have disclosed only a few cases with demonstrable erosion of blood vessels and all of these patients had massive colonic bleeding; and that associated pathology presumed to be the cause of colonic bleeding has not been recorded in patients with massive bleeding to any extent compared to the frequency of such records in patients with mild hemorrhage; it is, therefore, felt that one may reasonably accept the statement that diverticulitis may produce massive colonic hemorrhage.

It is true that there may be on occasions no allowable alternative to operation when bleeding is uncontrolled and exsanguinating (Rosenberg and Rosenberg (1964)). It is also true that several authors have reported successful control of bleeding by operation involving only partial colectomies (Stahlgren and Ferguson (1958); Cate (1953);

TABLE 8.—*Results of Surgery for Massive Bleeding in Diverticulitis of the Colon (Summary of Table 7)*

Total number of patients who had operations	41
Total number of deaths	13
Mortality rate	32%

TABLE 9.—*Results of Conservative Management for Massive Hemorrhage*

Author	Ref No.	No. Patients	No. Survivors
Hartley	22	14	14
Keith and Rini	14	19	19
Kunath	38	1	1
Noer et al	2	5	1
Ross and Eddy	15	16	16

Rosenberg and Rosenberg (1964); and Welch et al (1953)).

Despite these few favorable reports we still feel that conservative management is the method of choice in the control of massive hemorrhage believed to be due to diverticulitis for the following reasons: that spontaneous cessation may be anticipated in most patients, that recurrence is infrequent, that considerable difficulties may attend surgery, and that the mortality of operative treatment is far too high (32%).

Barring only the small group of patients with exsanguinating hemorrhage who may require a life-saving operation, the management of patients with massive colonic bleeding from diverticulitis should be conservative.

Mild Hemorrhage.—Management of mild bleeding believed to be due to diverticulitis is a less urgent problem than is the care of massive bleeding, but it is nonetheless confounded by certain other considerations which create doubt and difficulties. The following points will come to mind:

(1) Diverticulitis is a common condition, being found in 5.0% to 6.5% of people over the age of 40 (Gilchrist and Economou (1953), Jones (1930)). There is, therefore, an acknowledged risk of diverticulitis and other common pathological lesions of the colon presenting together by chance association.

(2) Many of the causes of colonic bleeding are difficult to establish with precision. Colonic polyps which have eluded detection after barium enema

TABLE 10.—*Results of Conservative Management for Massive Hemorrhage (Summary of Table 9)*

Total number of patients treated	55
Number of deaths	4
Mortality rate	8%

TABLE 11.—*Incidence of Associated Pathology in Patients With Diverticulitis of the Colon and Rectal Bleeding (Mild)*

Author	Ref No.	No. Patients	Findings			
			Diverticulitis Only	Benign Polyp	Malignant Polyp	Carcinoma
Colcock	51	40	35	3	1	1
Jones	28	4	0	1	0	3
Lloyd-Davies	52	9	3	2	2	2
May and Lowenthal	53	38	32	0	0	6
Moore and Kirksey	54	22	20	0	0	2
Rankin and Brown	47	19	18	0	0	1
Scarborough	23	16	0	11	1	4
Scarborough and Klein	24	113	24	37	11	41

examination with air contrast on five occasions have later been removed at laparotomy (Scarborough (1958)). It is not surprising then that the display of such a lesion may, in the presence of diverticulitis, be next to impossible.

(3) Although it is clearly established that polyps and carcinoma frequently give rise to moderate bleeding, the case against diverticulitis is still open to some question.

(4) There is a high incidence of associated pathological lesions in patients with diverticulitis and rectal bleeding (Tables 11 and 12). The experience of Scarborough (1958), who removed polypoid lesions from the colon in 16 patients and who did nothing at all to the associated diverticulitis, had the satisfaction in each instance of curing the bleeding completely. This is surely strong presumptive evidence that the polyps and not the diverticulitis were, in these patients, responsible for the bleeding.

(5) It will be seen from Table 12 that no less than 29% of the associated pathological lesions were malignant. Further, we must take note that with the passage of time a proportion of the polyps believed

to be benign will almost certainly assume a more active growth.

(6) The view is fairly generally held among surgeons that diverticulitis should be managed conservatively and that operation should be reserved for the complications of the disease. However, Smithwick (1960) has pointed out that 10% of patients will develop complications within five years after the initial diagnosis has been made; with this kind of argument in mind many surgeons now advise bowel resection for the uncomplicated case (Colcock and Sass (1952); Bacon and Berkley (1960); Bartlett and McDermott (1953); Hartley (1964); Souttar and Goligher (1956)).

(7) The results of surgery for uncomplicated diverticulitis are set out in Table 13. Although it is admitted that this represents the experience of the best, the mortality of primary resection is only 1.5%.

TABLE 13.—*Results for Surgery * in Uncomplicated Diverticulitis*

Author	Ref No.	No. Patients	No. Deaths
Bacon and Berkley	31	126	2
Colcock and Sass	30	40	0
McCune et al	55	26	1
Moore and Kirksey	54	14	0
Smithwick	29	359	5
Total		565	8(1.5%)

* The surgery was usually sigmoid colectomy and was done in from one to three stages.

TABLE 12.—*Incidence of Associated Pathology in Patients With Diverticulitis of the Colon and Rectal Bleeding (Mild) (Summary of Table 11)*

Total number of patients	261
Diverticulitis only	132
Benign polyp	54
Malignant polyp	15
Carcinoma	60
Incidence of associated malignancy	29%
Incidence of associated disease	50%

Bearing the above considerations in mind, it seems allowable to come to the following conclusions: since the bleeding may be due to a malignant cause in as many as one in every three patients, since the risk of further complications of diverticulitis is as high as 10%, and since the mortality of resection may be as low as 1.5%, one can make a good case for advising exploratory laparotomy (if the patient's general condition allows), even when all other methods of investigation have failed to shake the diagnosis of diverticulitis alone.

Comment

Although we tend to take it for granted that diverticulitis causes rectal bleeding, there is remarkably little direct evidence to support this belief and even the circumstantial evidence is not very convincing. The direct evidence can be summarized as follows: The intimate anatomical relationship of moderate sized vessels to the diverticula, Noer (1955), Slack (1962). The frequency of mucosal ulceration in cases of diverticulitis, Rosenberg and Rosenberg (1964), Slack (1962), Salgado et al (1961). The reported series of cases in which bleeding has actually been observed from diverticula.

The circumstantial evidence is suspect on one score in particular. Since the majority of patients treated conservatively do not appear to have any further bleeding, one cannot reasonably claim that the apparently successful resection of a segment of colon containing diverticula has necessarily removed the source of the bleeding.

It is freely acknowledged that the diagnosis is legitimately made only as one of exclusion. Quinn and Ochsner (1953) were acutely aware of the difficulties in diagnosis and in an effort to make the diagnosis reasonably well founded stipulated that the

following diagnostic criteria must be satisfied before one is justified in attributing rectal bleeding to diverticulitis. Their criteria were: gross blood, bright or maroon colored, passed per rectum; barium enema evidence of diverticula; absence of other bowel lesions as revealed by sigmoidoscopy or proctoscopy; and the absence of any radiological evidence of any alternative source of bleeding in the upper intestinal tract.

Quinn (1961) has since added another criterion, namely, normal blood coagulation.

However discerning a surgeon may be, his acceptance of diverticulitis as a source of rectal bleeding continues not infrequently to bring him into formidable difficulties. It is a diagnosis which he has learned to accept with caution, for a good reason.

Summary

The literature on colonic bleeding associated with diverticulitis has been reviewed.

There seems good evidence to support the statement that diverticulitis of the colon may be the cause of massive colonic bleeding.

Mild colonic bleeding may be due to diverticulitis, but a diligent search must be made for other possible causes such as polyps or carcinoma. It is our belief that diverticulitis is responsible for mild colonic bleeding in no more than half of the commonly reported incidence of 15%.

The management of massive hemorrhage from diverticulitis should be conservative, whereas a more energetic diagnostic approach should apply in particular to the group with mild bleeding and exploratory laparotomy may often be sanctioned in the treatment of this group.

(The references may be seen in the original article.)

FROM THE NOTEBOOK

RABIES IN MAN AND ANIMALS

This very informative article about rabies incorporates much of the report by the WHO Expert Committee on Rabies (Wld Hlth Org Rpt Ser, 1966, 321) which met in Geneva in June 1965. It describes the application of tissue culture techniques to the study of rabies virus and the mechanism of rabies infection. This is probably the most significant advance in the fundamental research of this disease in the past few years. Studies on the pathogenesis of rabies have shown that, while virus multiplication at the site of introduction may occur, this is not necessary to initiate infection. In most instances, virus invades nervous tissue within a relatively short time after exposure, reaching the central nervous system via the peripheral nerves. There is also evidence that it may travel in the opposite direction and it is believed that the salivary glands become infected in this way.

Studies in establishing a diagnosis using the fluorescent antibody technique are described and this, according to the WHO Expert Committee is "the best single test currently available for the rapid diagnosis of rabies." However, few laboratories are equipped for or have sufficiently well trained technicians for this technique and the microscopic examination of the brain for Negri bodies, isolation of rabies virus from tissue specimens and, when necessary, the conformation serum-virus neutralization

test remain important techniques in the laboratory diagnosis of rabies.

The various vaccines are discussed, those available now and those under development such as those which can be produced in tissue culture. The aim is to avoid the complications of post-vaccinal encephalitis and paralysis which may occur with vaccines prepared from nervous tissue. The vaccine prepared from duck embryos is most widely used in the USA.

In addition to the local treatment of local injuries caused by a rabid animal, when these are severe (multiple bites, or bites on the face, head, finger, or neck, and in all cases of unprovoked wild animal bites), antirabies serum or its globulin fractions should be given as soon as possible, immediately followed by a course of vaccination. Antirabies serum produced in horses, mules, or sheep may, of course, give rise to serum sickness or severe anaphylactic reactions and the usual precautions must be taken. The Expert Committee advises booster doses of the vaccine at 16 days and at 20 days following the last daily dose.

The Local Treatment of Wounds Involving Possible Exposure to Rabies (WHO Tech Rep Ser, 1966, No. 321, Expert Comm on Rabies) and the Specific Systemic Treatment (See NavMed P-5052. 15A) are added.—WHO Chronicle 20(4): 115-121, April, 1966.

WHO Tech Rep Ser 1966, No. 321, Expert Comm on Rabies

A. Local Treatment of Wounds Involving Possible Exposure to Rabies

(1) Recommended in all exposures

(a) First-aid treatment

Immediate washing and flushing with soap and water, detergent or water alone (recommended procedure in all bite wounds including those unrelated to possible exposure to rabies).

(b) Treatment by or under direction of a physician

- (i) Adequate cleansing of the wound.
- (ii) Thorough treatment with 20% soap solution and/or the application of a quaternary ammonium compound or other substance of proven lethal effect on the rabies virus.¹
- (iii) Topical application of antirabies serum or its liquid or powdered globulin preparation (optional).
- (iv) Administration, where indicated, of antitetanus procedures and of antibiotics and drugs to control infections other than rabies.
- (v) Suturing of wound not advised.

(2) Additional local treatment for severe exposures only

(a) Topical application of antirabies serum or its liquid or powdered globulin preparation.

(b) Infiltration of antirabies serum around the wound.

¹ Where soap has been used to clean wounds, all traces of it should be removed before the application of quaternary ammonium compounds because soap neutralizes the activity of such compounds.

Benzalkonium chloride, in a 1% concentration, has been demonstrated to be effective in the local treatment of wounds in guinea pigs infected with rabies virus. It should be noted that at this concentration quaternary ammonium compounds may exert a deleterious effect on tissues.

Compounds that have been demonstrated to have a specific lethal effect on rabies virus *in vitro* (different assay systems in mice) include the following:

Quaternary ammonium compounds

0.1% (1 : 1000) benzalkonium chloride = mixture of alkylbenzyltrimethylammonium chlorides

0.1% (1 : 1000) cetrimonium bromide = hexadecyltrimethylammonium bromide

1.0% (1 : 100) Hyamine 2389 = mixture containing 40% of methyldecylbenzyltrimethylammonium chloride and 10% of methyldecylxylene bis(trimethylammonium chloride)

1.0% (1 : 100) methyl benzethonium chloride = benzyltrimethyl{2-[2-(1,1,3,3-tetramethylbutyl)ethoxy]ethyl} ammonium chloride

1.0% (1 : 100) benzethonium chloride = benzyltrimethyl{2-[2-(1,1,3,3-tetramethylbutyl)phenoxy]ethoxy}ethyl} ammonium chloride

1.0% (1 : 100) SKF 11831 = *p*-phenylphenacylhexamethylenetetrammonium bromide.

Other substances

43–70% ethanol; tincture of thiomersal; tincture of iodine and up to 0.01% (1 : 10000) aqueous solutions of iodine; 1% to 2% soap solutions.

B. Specific Systemic Treatment

Nature of exposure	Status of biting animal (irrespective of whether vaccinated or not)		
	At time of exposure	During observation period of ten days	Recommended treatment
I. No lesions; indirect contact	Rabid	—	None
II. Licks:			
(1) unabraded skin	Rabid	—	None
(2) abraded skin, scratches and unabraded or abraded mucosa	(a) healthy	Clinical signs of rabies or proven rabid (laboratory)	Start vaccine ¹ at first signs of rabies in the biting animal
	(b) signs suggestive of rabies	Healthy	Start vaccine ¹ immediately; stop treatment if animal is normal on fifth day after exposure
	(c) rabid, escaped, killed or unknown	—	Start vaccine ¹ immediately
III. Bites:			
(1) mild exposure	(a) healthy	Clinical signs of rabies or proven rabid (laboratory)	Start vaccine ^{1, 2} at first signs of rabies in the biting animal
	(b) signs suggestive of rabies	Healthy	Start vaccine ¹ immediately; stop treatment if animal is normal on fifth day after exposure
	(c) rabid, escaped, killed or unknown	—	Start vaccine ^{1, 2} immediately

Nature of exposure	Status of biting animal (irrespective of whether vaccinated or not)		Recommended treatment
	At time of exposure	During observation period of ten days	
(2) severe exposure (multiple, or face, head, finger or neck bites)	(d) wild (wolf, jackal, fox, bat, etc.)	—	Serum ² immediately, followed by a course of vaccine ¹
	(a) healthy	Clinical signs of rabies or proven rabid (laboratory)	Serum ² immediately; start vaccine ¹ at first sign of rabies in the biting animal
	(b) signs suggestive of rabies	Healthy	Serum ² immediately followed by vaccine; vaccine may be stopped if animal is normal on fifth day after exposure
	(c) rabid, escaped, killed or unknown (d) wild (wolf, jackal, pariah dog, fox, bat, etc.)	—	Serum ² immediately, followed by vaccine ¹

¹ Practice varies concerning the volume of vaccine per dose and the number of doses recommended in a given situation. In general, the equivalent of at least 2 ml of a 5% tissue emulsion should be given subcutaneously daily for 14 consecutive days. Many laboratories use 20 to 30 doses in severe exposures. To ensure the production and maintenance of high levels of serum-neutralizing antibodies, booster doses should be given at 10 days and 20 or more days following the last daily dose of vaccine in *all* cases. This is especially important if antirabies serum has been used, in order to overcome the interference effect.

² In all severe exposures and in all cases of unprovoked wild animal bites, antirabies serum or its globulin fractions together with vaccine should be employed. This is considered by the Committee as the *best* specific treatment available for the post-exposure prophylaxis of rabies in man. Although experience indicates that vaccine alone is sufficient for mild exposures, there is no doubt that here also the combined serum-vaccine treatment will give the best protection. However, both the serum and the vaccine can cause deleterious reactions. Moreover, the combined therapy is more expensive; its use in mild exposures is therefore considered optional. As with vaccine alone, it is important to start combined serum and vaccine treatment as early as possible after exposure, but serum should still be used no matter what the time interval. Serum should be given in a single dose (40 IU per kg of body weight) and the first dose of vaccine inoculated at the same time. Sensitivity to the serum must be determined before its administration.

DENTAL SECTION

RECURRENT APHTHOUS STOMATITIS— CONCEPTS IN PATHOGENESIS

M. H. Samitz and R. A. Weinberg. Postgrad Med 39(3): 221-229, March 1966.

At some period of his life, one of every five persons will have aphthous stomatitis. Although usually a transient and trivial illness, severe exacerbations of chronic or recurrent aphthous stomatitis (RAS) may sometimes be incapacitating. Recurrent aphthae are a challenging phenomenon; the management of more refractory cases continues to be a difficult

problem. Diagnosis is usually easy, but to identify the causal mechanism often is a formidable task. Among possible etiological factors are food hypersensitivity, drug reactions (allergic or toxic), infections, autosensitization (menstrual reactions, systemic disease), psychogenic factors, and RAS-like lesions associated with trauma, systemic disease (nutritional, hemo-poetic), and primary dermatologic diseases (contact-type epidermal sensitization, systemic dermatologic disease). After a detailed review of those possible etiological factors, and a review of the clinical and histopathological characteristics of

RAS, the authors point out that management of some cases continues to present difficult problems. The great number of topical preparations that have been advanced for local therapy of RAS speaks eloquently of their inadequacy. For specific treatment of refractory recurrent cases, a correct etiological diagnosis and the elimination of potential contributory factors is essential. Undoubtedly, overlapping of causative factors occurs. An intelligently planned immunologic investigation is requisite to successful management of many of the chronic cases. The possibilities of an auto-allergic cause merits further investigation.

IMMUNIZATION AGAINST TUMORS "ENCOURAGING"

*Abstract from "Medical News," JAMA 195
(13): 29-30, March 28, 1966.*

A new approach to cancer treatment—active immunization of the patient against his tumors—has produced "encouraging results." Preliminary clinical trials have been conducted over the past three years in three Michigan hospitals, on 20 advanced cancer patients. Further studies in a larger series of patients is planned to begin in the next few months.

The antigenic sera is prepared by coupling a suspension of cancer cells from the patient's own tumor and an organic intermediate, bisdiazobenzidine, to a highly antigenic foreign protein, rabbit gamma globulin. This complex is then injected back into the patient to stimulate his antibody response to his own tumor. Antitumor antibody was detected in all patients after vaccine injection. Having been limited to date to patients previously judged incurable, the investigators point out the need to study the technique in patients with less advanced disease, in whom more normal systemic antibody responses may be expected.

To date, the study has been limited to 20 volunteer patients with a variety of malignant solid tumors and lymphomas. These patients were considered incurable, with metastasis. Of especial interest to the dental profession is the fact that one patient, with squamous cell carcinoma of the jaw, has shown complete histological and clinical regression. This patient had no previous therapy, and has now been followed for two years. Among eight other patients with up to two year follow-up and which show stabilization, regression or retardation of tumor growth, was a baso-squamous carcinoma of the face.

PERSONNEL AND PROFESSIONAL NOTES

DENTAL TECHNICIAN AWARDED AIR MEDAL. Dental Technician Second Class Waldron G. Karp USN recently became the first dental technician ever to be awarded the Air Medal. The six year Navy veteran was presented the award for meritorious service while serving as a medical aid man in Vietnam.

During the period of March to September 1964, Karp served with Marine Medium Helicopter Squadrons 162 and 364 in Vietnam and made numerous rescue and evacuation flights to U.S. and South Vietnamese outposts.

In addition to the Air Medal, Karp holds the Navy Unit Commendation Medal, the Navy Good Conduct Medal and the Armed Forces Expeditionary Medal.

Karp is currently assigned to APL-27, U.S. Naval Support Activity, APO, San Francisco, California 96337.

LINEAL POSITION DETERMINATIONS. The Dental Division has received numerous letters from

dental officers who have sought an explanation to alleged inequities in the assignment of their lineal positions. Some have simply complained, others have offered possible "solutions" and perhaps some, who have not sought an explanation about this matter, continue to be puzzled. The following notes are listed as a partial clarification of the establishing of lineal position:

1. Lineal positions are originally computed from several factors:

- (a) Date of *receipt* of application by the Bureau of Naval Personnel.
- (b) Date of graduation from dental school.
- (c) Date of acceptance of first appointment.
- (d) Ensigns (1925) receive precedence over civilian applicants of the *same* graduating class.

2. Although Year Groups are subject to change, lineal positions are not.

3. A "due course" date is established by the Chief of Naval Personnel from the above, and other factors, and remains unchanged unless originally in

error due to misinformation regarding the factors considered.

4. An officer released from active duty, who maintains an active status in the Reserve and later returns to active duty, or augments to the Regular Navy, resumes his original lineal position. (This has been the regulation since 1960).

Although it may appear to some officers that inequities exist in a few cases, the assignment of lineal position is a complicated but fair procedure, all things being considered, of aligning officer personnel.

MOBILE ULTRASONIC DENTAL PROPHYLAXIS UNIT. Several suggestions have been received from various activities to enhance the utilization of the ultrasonic dental prophylaxis unit (FSN 6520-890-1584). The dental department of the USS GRAND CANYON (AD-28) accomplished this by making the ultrasonic prophylaxis unit mobile. A stainless steel surgical table with a drawer and casters (FSN 6530-710-0220) was procured and the ultrasonic prophylaxis unit mounted on the top of the table.

Quick coupler inserts for the water hoses were procured from the manufacturer of the prophylaxis unit and installed in each of the dental units of the dental department. The drawer of the table is used for storage of the assorted prophylaxis unit inserts. The table is secured during heavy weather, as is other dental equipment.

Thus, the ultrasonic prophylaxis unit can be moved from operatory to operatory as needed rather than being relegated to use in one specific operatory.

An alternate method is to use a bedside cabinet (FSN 6530-708-9025) and replace the glides with casters.

DENTAL EQUIPMENT MODERNIZATION PROGRAM. Attention is invited to change Bulletin No. 10 of the Federal Supply Catalog, Medical Materiel, which is effective 1 May 1966. Recently standardized dental operating units, chairs, lights, stools and cabinetry are described in this publication, and these items now have Federal stock numbers assigned.

Readers are reminded that the color of the dental unit, chair, light, and cabinetry must be specified when ordered. In addition, when requisitioning the ceiling dental operating lights (FSN 6520-890-2183 and FSN 6520-890-2184), the height of the ceiling must be specified. The maximum ceiling

height in which the ceiling track light can be installed is 9'6".

ON APPOINTMENT CHITS. CAPT G. E. Wheeler, Jr. DC USNR has developed a duplicate appointment chit system which has reduced broken appointments at that activity to less than 0.5 percent. Using a locally printed form, the original typed copy is given to the patient and the carbon copy is guard mailed to the patient's administrative superior. Appointments are made far enough in advance to permit the patient's superior to adjust planned working schedules to free the patient, or to inform the dental department not less than 24 hours in advance of an appointment which must be cancelled. The advantage of this system is that the patient's military superior shares in responsibility and supports the efforts of the dental department.

Other highly effective appointment systems were described in *U.S. Navy Medical News Letter* 46(4): 18, 27 August 1965 and 44(2): 26, 24 July 1964. The Inspector General, Dental has observed that many dental activities use a local form which is associated with a Command Notice, 6600.3 series. This carries more local force, and thereby reduces appointment failure. Alternatively, many activities use NAVMED 1379, described in MANMED 6-153. Use of the "Arrived" and "Departed" column is appreciated by military superiors, as a method for management control. The important point here is that an appointment system should be developed which will be effective in local military organizations. It is the dental officer's responsibility to adapt in some part to the unique characteristics of his duty station. Whether it be NAVMED 1379 or a local form, administer dental appointments in a system which will be most efficient.

NAVAL DENTAL RESEARCH SEMINAR. Coincident with the meeting of the International Association for Dental Research, a Naval Dental Research Seminar, attended by 27 participants and guests, was held in Miami, Florida on 27 March 1966. The seminar was chaired by CAPT C. A. Ostrom DC USN, Head, Professional Branch, Bureau of Medicine and Surgery. In a general review, it was recognized that the Navy's programs in dental research had been vigorously reoriented toward mission relevant objectives, principally; through a series of three conferences, as well as dedicated effort by CAPT K. C. Hoerman DC USN, Head, Research Section, Dental Division, Bureau of Medicine and Surgery, and by Dr. A. E. Callahan,

Head, Medicine and Dentistry Branch, Office of Naval Research. A joint ONR-BUMED Compendium of Naval Dental Research has been published. A program of research in dental operatory and equipment design has been initiated. Dr. Callahan described the reorientation of ONR's dental research grant program, the organization of the Oral Biology Review Panel, and the intent of the Compendium of Naval Dental Research to facilitate universities' research in fields of relevance to Navy Dentistry. CAPT G. H. Rovelstad DC USN described the development of the Naval Dental Research Institute, Great Lakes. CAPT L. Armstrong DC USN reported on the progress of the Dental Operatory and Equipment Design program at U.S. Naval Training Center, Great Lakes. CAPT N. W. Rupp DC USN described a new major program in dental education research at the Naval Dental School. CAPT M. Mazzarella DC USN of Naval Medical Research Unit #1, presented a report on his study of the potential aerobiological hazards of the air-turbine handpiece in dental treatment of meningococcus and streptococcus pharyngeal carriers.

INTERNATIONAL ASSOCIATION FOR DENTAL RESEARCH. The 44th general meeting of the International Association for Dental Research was held in Miami, Florida, 24-27 March 1966. Among a total of 521 research reports, 15 papers were presented on aspects of the U.S. Navy's intramural dental research program. In the following list of Navy presentations, three current Postdoctoral Fellows are asterisked.

P. B. Carroll* and H. J. Keene (USNTC, Great Lakes). Parotid saliva flow rates in caries resistant naval recruits.

W. R. Cotton and S. M. Hefferren (NMRI, NNMCM, Bethesda). An autoradiographic study of tryptophane-H³ incorporation into rat enamel.

K. C. Hoerman and A. Y. Balekjian (NMRI, NNMCM, Bethesda). On the probability that the crosslink of collagen is its prime luminescent center.

A. B. Luke* and P. J. Boyne (NMRI, NNMCM, Bethesda). Study of host response to implants of processed lyophilized bone heterografts in restoration of edentulous alveolar ridges.

G. E. Clark*, A. Y. Balekjian and K. C. Hoerman (NMRI, NNMCM, Bethesda). Uniformity of the apparent first dissociation constant (pK_1') for carbonic acid in variously stimulated parotid saliva.

V. J. Berzinskas, A. Y. Balekjian and K. C.

Hoerman (NMRI, NNMCM, Bethesda). The free amino acids of parotid saliva.

B. L. Lamberts and T. S. Meyer (USNTC, Great Lakes). Isolation of crystalline amylase from human parotid saliva.

T. S. Meyer and B. L. Lambert (USNTC, Great Lakes). Separation of amylolytic fractions from human parotid saliva by acrylamide gel electrophoresis.

A. Y. Balekjian, K. C. Hoerman, N. Weiss and V. J. Berzinskas (NMRI, NNMCM, Bethesda). Isolation of a lysozyme from human parotid saliva by ion-exchange chromatography.

I. L. Shklair (USNTC, Great Lakes). C-reactive protein and periodontal disease.

J. P. Quinn (USNTC, Great Lakes). Parotid saliva flow rates in caries resistant naval recruits.

H. J. Keene and S. Hoffman (USNTC, Great Lakes). Profile of the caries-free naval recruit.

P. J. Boyne (NMRI, NNMCM, Bethesda). Osseous repair and mandibular growth following subcondylar fractures.

H. W. Gilmore, H. R. Stanley and J. J. Thomas (NDS, NNMCM, Bethesda). The effect of gold foil condensation on the human dental pulp.

W. R. Shiller (USNSMC, New London). Oral health of operating submarine crews.

DENTAL OFFICER PRESENTATIONS. Dental officers at the U.S. Naval Hospital, Great Lakes, Illinois presented the following table clinics at the Wisconsin State Dental Meeting at Milwaukee, Wisconsin, on 20 April 1966. "Use of Maxillary Surgical Acrylic Splints"—LCDR J. J. Verunac DC USN; "Partial Denture Design"—LT D. T. Beverly DC USN; "Gold Foil in Every Day Practice"—LT J. J. Brennan DC USN; "A Simplified Reline Technique for Full and Partial Dentures"—LT R. S. Burke DC USN.

CAPT G. H. Rovelstad DC USN, Director, Dental Research Facility Division, Dental Department, U.S. Naval Training Center, Great Lakes, Illinois, presented a lecture entitled "Current Concepts of Caries Prevention," before the Massachusetts State Society of Dentistry for Children. The meeting was held on 4 May 1966. CAPT Rovelstad presented a lecture on "Practical Dental Caries Prevention," on the same day before the Massachusetts State Dental Society.

LCDR R. W. Longton DC USN, Assistant Dental

Research Officer, Dental Research Facility Division, Dental Department, U.S. Naval Training Center, Great Lakes, Illinois, participated in a table clinic on "Dental Office Asepsis," before the Wisconsin State Dental Society on 20 April 1966.

CONTINUING EDUCATION COURSES CONDUCTED BY U.S. ARMY. Attention is invited to a listing elsewhere in this issue of the News Letter of Postgraduate Professional Short Courses to be

conducted by the U.S. Army during Fiscal Year 1967.

Officers of the Regular Naval Dental Corps may make application in the same manner as for short courses at the Naval Dental School, MANMED art. 6-130. Budgetary limitations usually preclude travel and per diem support.

Officers of the Naval Reserve may make application in accordance with current directives through District Commandants.

PREVENTIVE MEDICINE SECTION

MALARIA IN THE U.S.A.—1965

USDHEW PHS Morb & Mort Wkly Rpt 14(51): 434, week ending 25 Dec 1965.

Through 23 Dec 1965, 80 confirmed and presumptive cases of malaria occurred during 1965 in the United States. The age and sex distribution of these 80 cases is shown in Table 1 where it will be noted that 67 were in males, 51.3% of the total cases occurred in the 20-29 year age group.

There were 43 cases in civilians of whom 6 were Peace Corps workers and 2 were merchant seamen; the other 37 cases were in military personnel.

As the year progressed there was an increase in the proportion of military personnel among the cases reported by date of onset of the illness. During the four quarters of the year the increase was: 1st. Quarter 23.5%, 2nd. Quarter 35%, 3rd. Quarter 52%, 4th. Quarter 56%.

Table 1

AGE AND SEX DISTRIBUTION OF CASES OF MALARIA UNITED STATES, 1965*

Age Group	Male	Female	Total	Percent
0-9	2	3	5	6.3
10-19	7	4	11	13.8
20-29	38	3	41	51.3
30-39	6	2	8	10.0
40-49	3	1	4	5.0
50-59	3	—	3	3.8
60-69	1	—	1	1.3
70+	—	—	—	—
Unknown	7	—	7	8.8
Total	67	13	80	100

This increasing proportion of military to civilian cases is related to the return of service men who have been infected in Vietnam.

Of the total of 80 cases, the distribution by species of parasite in 75 instances is shown in Table 2. The country of origin of 20 of the 80 cases was Vietnam. In 10 of these 20 cases the parasite was *Plasmodium falciparum*; *P. vivax* was identified in 8 and the species was not identified in two.

Table 2

CONFIRMED CASES OF MALARIA BY SPECIES UNITED STATES, 1965*

Species	Total	Percent
<i>P. vivax</i>	50	66.7
<i>P. falciparum</i>	18	24.0
<i>P. malariae</i>	5	6.7
<i>P. ovale</i>	2	2.7
Total	75	100

*Reported as of 23 Dec 1965.

CONTINUING STUDY NEEDED TO UNDERSTAND VIRUSES

Public Health Report 81(3): 227-228, Mar 1966.

Adenoviruses as a group, but especially type 2, which could not be shown to be pathogenic in an institutionalized population, have been associated with disease in free-living civilian families, announced Dr. John P. Fox, professor of preventive medicine, University of Washington, Seattle, and his associates.

The Virus Watch has been concerned with viruses and mycoplasma recovered from the respira-

tory and alimentary tracts of human beings. Two contrasting communities, Shelter Island, with 1,400 people at the eastern tip of Long Island, and Stuyvesant Town, an apartment development with 30,000 people living in 9,000 families, were studied from Jan 1961 to Jun 1963. Thereafter until Mar 1965 only Stuyvesant Town was studied. The major objective was to study infection experience in infants and their families.

Some 4,200 illnesses, 78% respiratory, were recorded. The average was 3.8 respiratory illnesses per person. Illness patterns by season and age were similar to those reported for other groups.

Excluding 1,500 isolates of vaccine polioviruses the 31,000 specimens yielded nearly 1,200 identified agents from 700 infections and 200 isolates still unidentified. Adenoviruses were most common, but Coxsackie and rhinoviruses also were found often.

Except for adenoviruses, which evinced no clear pattern, the expected seasonal variations in infection were observed. Irregularly intermittent excretion of adenoviruses over periods as long as 906 days made identification of new infections difficult except in infants observed from birth.

Adenoviruses and rhinoviruses were excreted frequently in every month. However, excretion of rhinoviruses peaked sharply in the Mar-May period, while excretion of adenoviruses reached a low point in Sep. Maximum levels of Coxsackie exceeded those for echoviruses, but both were absent from Jan through Jul. These patterns were similar in Shelter Island and Stuyvesant Town. In Shelter Island infections were slightly less frequent, possibly because it was less densely populated or because the more labile viruses lost infectivity as specimens were taken to a laboratory 100 miles away.

Family episodes of infections with Coxsackie or rhinoviruses were fairly clear-cut and 2 or more infections in a family were common—the infant escaping in about 30% of the episodes. Echoviruses, peculiarly, often were detected only in a single family member and were not discovered in two-thirds of the infants.

Specimens (53%) were taken from the respira-

tory tract, but except for the rhinoviruses and parainfluenza viruses, they produced far fewer isolates than feces. More than half the infections with either adenoviruses or enteroviruses were detected only by recovery of virus from feces.

The Virus Watch is a laborious but essential approach to understanding the life history of infectious agents, especially those which often cause silent infections. Value of this data on virus excretion should be enhanced when serologic studies are completed.

INVESTIGATIONAL VACCINES PROGRAM

*USDHEW PHS CDC Morb & Mort Wkly
Rpt 15(15): 132, 16 Apr 1966.*

An Investigational Vaccine program has been established at the Laboratory Branch, Communicable Disease Center, Atlanta, Georgia, to provide vaccine that are needed for human immunization but are not available from commercial sources. The objective of the program is to provide qualified medical investigators with a source of vaccines which have been proven effective and safe, but their applications are too limited to sustain commercial production and distribution. These steps are being taken on the recommendation of The Public Health Service Advisory Committee on Immunization Practice.

The first product that will be available in this program is the pentavalent (ABCDE) botulinum toxoid, aluminum phosphate absorbed, that was developed by Dr. George G. Wright and associates at the U.S. Army Biological Laboratories, Fort Detrick, Frederick, Maryland.

The toxoid will be distributed as an Investigational New Drug. Suggestions will be considered regarding additional prophylactic agents that meet the program objective stated above and which might be considered for provision by the Communicable Disease Center in the future.

Inquiries should be addressed to the Preventive Medicine Division, Bureau of Medicine and Surgery, Washington, D.C. 20390.

CONTAMINATION OF IMPORTED PLASTIC NOVELTIES WITH SALMONELLA ORGANISMS

Dr. Val Jonsson, Michael Ballas, Dr. George H. Agate, Dr. Robert A. MacCready, Dr. Philip Brachman, Dr. James Mason, CDC Salmonella Surveillance, PHS DHEW Rpt No. 45, page 4, 31 Jan 1966.

A wide variety of bacteria and fungi have been isolated from plastic novelty items known as "Ice Balls", "Ice Kools", and "Pink Elephants" imported from Hong Kong and used for cooling drinks.

The presence of salmonella organisms in these novelty items has now been reported by 4 different states and confirmed by Laboratory Branch, CDC Atlanta, Ga. *Salmonella typhi* phage type D6 was recovered from a "Pink Elephant" by the St. Louis City Health Department Laboratories. This phage type, frequently isolated in Asia, is very uncommon in the United States. The state of Massachusetts has recently isolated *S. typhi* phage type C1 from "Ice Balls". This phage type is frequently found in the United States.

The Mecklenburg County (North Carolina) Health Department has isolations of *S. typhi-murium* and *Shigella flexneri* 3a from "Ice Balls". Recovery was made by inoculating the sediment obtained from centrifugation of 200 cc of fluid obtained from the balls on selective media. The Michigan Department of Health has reported the recovery of *S. heidelberg* from "Ice Balls".

It is emphasized that to date no human disease has been attributed to contact with any of these items. Sale of the items has been discontinued in many communities under the authority of local health departments. The Communicable Disease Center, Atlanta, welcomes additional reports of isolation of salmonella organisms from these items or of possible human illness related to contact with same.

PEST CONTROL

This statement by the Federal Committee on Pest Control, Executive Secretary, Washington, D.C. 20201, was released by the Departments of Agriculture; Health, Education, and Welfare; and Interior. Released 19 Nov 1965.

A comprehensive program to monitor levels of pesticide residues in people, fish and wildlife, food

and feed, soil, and water in the United States has been approved by the Federal Committee on Pest Control (FCPC).

The FCPC, an interagency group, reviews all pest control activities conducted by Federal Departments or financed wholly or in part with Federal funds. Members of the FCPC include representatives of the Departments of Agriculture; Health, Education, and Welfare; Interior; and Defense.

The objective of the monitoring program is to determine the extent to which pesticide residue levels exist in the United States and to detect such increases or decreases as may occur in the future. This information is essential to local, State, Federal, and industry measures to improve the protection of people and beneficial life forms against possible pesticide hazards. Data developed by the program will be made widely available through the publication of summaries and by other means.

The program incorporates some Federal pesticides monitoring which the Departments have had under way for several years.

The program, developed by the FCPC Subcommittee on Pesticide Monitoring represents action by Federal Departments to coordinate and expand pesticide monitoring efforts in principal elements of the national environment. During the first year of the program, FCPC members expect to learn if details of the plan are workable and if it should be expanded. Environments being considered for inclusion are air, lakes, and ground water in which technical problems now make pesticide measurements difficult.

Pesticides in People

This portion of the program will be conducted by HEW's Public Health Service Office of Pesticides to satisfy needs for new information about pesticide levels in the general population in comparison with those among people highly exposed to pesticides. Three groups of people will be studied in each of 15 states:

1. People in the general urban population whose exposures largely are limited to pesticide traces in food, water, and air and amounts received during occasional use of pesticides in home or garden.
2. People living in rural environments where repeated non-occupational exposures to pesticides occur.
3. Persons experiencing potentially high exposures to pesticides; applicators, formulators, greenhouse workers, and aerial spray pilots.

One thousand nine hundred and fifty analyses will be made annually for each of several chlorinated hydrocarbons, the largest group of pesticides used.

Certain pesticide residues tend to accumulate in the fat of people (and in the fat of fish, birds and mammals). The individual sample for people will consist of 2.5 grams of fatty tissue—the size of the tip of a man's thumb—taken from any portion of the body.

Fish and Wildlife

The monitoring of fish by the Department of Interior will attempt to inform scientists about aquatic environmental conditions in which fish live and may provide the basis for intensive studies on the meaning of pesticide levels to the physiological processes of fish.

A minimum of 3 species of fish from 40 sites, of the United States will be studied twice a year, April and October for the presence of pesticide residues. Preference in fish to be sampled is: carp, buffalo, black bass, channel catfish, green sunfish, yellow perch, rainbow trout and squawfish.

Representative wildlife to be sampled will be the mallard duck, starling, and bald and golden eagles. The mallard is the most important duck to hunters and is distributed throughout the U.S. Analyses will be made from wings of birds killed during the waterfowl hunting season.

Analysis of starling specimens collected in August should reflect the use of pesticides during the growing season.

Golden and bald eagles already are being monitored by Interior's Bureau of Sport Fisheries and Wildlife. Specimens found dead or injured beyond recovery from any cause are analyzed.

Major estuaries, where salt and fresh water meet, and major river drainages containing commercial quantities of shellfish will be included in the program. Samples of shellfish, oysters and clams and sediment will be taken 3 times a year.

Food and Feed

Basic to consumer safety is the surveillance of pesticide residues in food which the Food and Drug Administration has been maintaining for decades to prevent food containing pesticides in excess of safe, legal tolerances from reaching the market.

FDA analyzes more than 25,000 raw agricultural commodity samples a year for compliance with the tolerances. This is about 1% of all shipments of unprocessed food in the U.S. Data obtained in this

work will be made available for the government-wide monitoring program together with results from FDA's analyses of "market basket" samples now taken annually at 5 locations in the country.

FDA checks on the adequacy of its surveillance of raw food for pesticide residues by analyzing "market baskets" of 82 food items in 12 commodity groups representing the 2-week diet of a 19-year-old boy, biggest eater in the nation. The commodity groups include dairy products; meat, fish, and poultry; grain and cereal products; and potatoes and leafy vegetables. Tests on these samples disclose the residues present on the foods when they are ready to be eaten.

The Department of Agriculture will support this part of the monitoring program by continuing to obtain yearly 3,500 samples of meat and meat products for pesticide residues analysis.

Soil

This part of the program is designed to determine the rate of accumulation of certain pesticides in the soil. Two categories of sampling sites are involved—those which have heavy pesticide use and those where there has been little or no use of pesticides. The Department of Agriculture has designated 20 high pesticide use sites to be studied on farm lands. Each study area consists of 1 square mile of agricultural land, divided into blocks of approximately 50 acres and 3 to 20 samples are taken from each block.

The soil sample consists of 50 3-inch cores. In addition to the farm lands study, 32 sites of low pesticide use or no use will be selected in cooperation with Federal and State agencies responsible for activities on public lands, such as parks, forests, and western rangelands. These agencies keep records of pesticide use for control of insects. Areas that have never been known to be exposed to pesticides will be included to determine the extent, if any, that pesticides may reach those areas.

Water Resources

Fifty-five locations, covering all of the major river drainages, will be sampled by the Department of Health, Education, and Welfare or Interior to provide continuing information on pesticide residues in the nation's water supply.

Rivers will be sampled at places where they empty into other bodies of water. Some samples will be taken at upstream locations. Monthly samples will be analyzed to a sensitivity of one part of pesticide to one trillion parts of water.

KNOW YOUR WORLD

DID YOU KNOW?

That 5 of the 6 quarantinable diseases were reported in the Americas in 1965?

No case of louse-borne relapsing fever was notified. Two cases of cholera of laboratory acquired infection were reported in the United States. Total reported incidence of jungle yellow fever and smallpox showed a slight decline in 1965 as compared with 1964, whereas the number of cases of plague and louse-borne typhus increased. (1)

That the Association of American Indians has asked Congress to authorize a 5-year program for the control of trachoma among Indians?

The disease, a major cause of blindness, was once nearly eradicated through the use of sulfanilamide but the treatment program for the western tribes was stopped in World War II. Trachoma now is the 4th disease on the list of most frequently reported diseases in the Indians. (2)

That newly revised Public Health Service estimates of the annual toll of accidents in the United States in 1965 include:

Persons killed	—	104,000
Persons killed, motor vehicle	—	46,000
Persons injured	—	52,000,000
Persons receiving medical care for injuries	—	45,000,000
Days of restricted activity	—	512,000,000
Days of bed-disability	—	132,000,000
Hospital bed-days	—	22,000,000
Hospital beds required for treatment	—	65,000
Hospital personnel required for treatment	—	88,000
Annual cost of accidents	—	16,000,000

(3)

That the American Petroleum Institute has allocated \$1,800,000 for research in 1966 on air and water pollution?

The Institute's projects will supplement the 41 million dollars to be spent by individual companies on air pollution research and will involve the sulphur and lead contents of gasoline and gasoline vapor pressure as sources of air pollution. (4)

That worldwide 51,334 cases and 13,990 deaths of cholera occurred in 1965?

The continued advance westward of cholera from the Asian regions where the disease has been prevalent is causing great concern to the World Health Organization. The severe intestinal illness last year invaded West Pakistan, Afghanistan, Iran and parts of the Soviet Union; 23 countries in all reported its presence. (5) (6)

That a pilot study conducted in 1962, of mouth lesions among 14,449 patients in 6 Public Health Service hospitals and outpatient clinics, that uncovered 1,120 mouth lesions and 24 cases of cancer, has led to one of the most extensive detection programs of its kind ever attempted in this country?

Patients in 13 hospitals and 20 clinics are being examined in the current investigation, under the auspices of the Division of Hospitals and in collaboration with the Cancer Control Branch of the Division of Chronic Diseases, Public Health Service. The study will evaluate exfoliative oral cytology—the diagnosis of living cells taken from internal or external surfaces of the body—as a method of determining malignancies.

In the first 2 years of the full-scale study, 133,600 persons 15 years of age and older have been examined. It is anticipated that by the conclusion of the study on 30 June 1966, more than ¼ million persons will have been examined. Among them are merchant seamen, members of the U.S. Coast Guard and other uniformed services and their dependents, and Federal employees who are injured on duty or become ill from causes related to their work. To date, 8,000 various mouth lesions have been discovered among the patients examined, and that the complete findings of the 3-year study will be published in 1966.

The original study was conducted at Baltimore, San Francisco and Staten Island PHS hospitals and the New York City, Pittsburgh and Washington, D. C., PHS Outpatient Clinics. (7)

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5. MASS DEPT PH Bull, "This Wk in Publ Hlth", 15(16): 156, Apr 18, 1966.
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EDITORIAL DESK

NAVY NURSE CORPS DIRECTOR RETIRES

Directorate of the Navy Nurse Corps changed hands 29 April 1966. In an informal ceremony, the Navy Surgeon General, VADM Robert B. Brown, delivered retirement orders to CAPT Ruth A. Erickson, the outgoing director, and then administered the oath of office to the new director, CAPT Veronica M. Bulshefski.

VADM Brown delivered to CAPT Erickson several acknowledgments of her exemplary military and professional service. These included a letter of congratulations from Vice President Humphrey, a citation from Minnesota Governor Karl Rolvaag, and the Navy Surgeon General's Certificate of Merit.

Present for the ceremony were the captain's father, Henry Erickson of Virginia, Minnesota, her sister and husband, Mr. and Mrs. C. A. Johnson of Arlington, and a host of friends and well-wishers including Vice Admiral and Mrs. Joel T. Boone and RADM Courtney Shands.

CAPT Erickson completes a four year tenure as Director of the Navy Nurse Corps. Her illustrious record of 30 years service in the Navy reflects a progression of assignments to leadership positions prior to and following World War II, culminating in her appointment as Director. She served with distinction as Chief of Nursing Service at the U.S. Naval Hospitals, Camp Lejeune, North Carolina; Portsmouth, Virginia; and Bethesda, Maryland. In addition to many administrative and domestic assignments, she has served at the Naval Hospital, Pearl Harbor, Hawaii, and aboard the USS RELIEF, the USS HAVEN and the SS PRESIDENT COOLIDGE. She accompanied the first war casualties evacuated to the United States aboard the PRESIDENT COOLIDGE on 19 December 1941 and was aboard the HAVEN on the day World War II ended.

CAPT Erickson's concept of the Directorship was always expressed in terms of progressive improvements of nursing service administration and nursing practice; continuing opportunities for the advancements of the officers in the Nurse Corps; expansion of nursing education programs; and maintaining the high standards of the Naval Service. Her exemplary administrative ability and her numerous accomplishments have earned for her the respect and esteem of her colleagues in military and civilian spheres.

Miss Erickson's future plans include travel in the United States and abroad and residence in the Washington, D.C. area.

NEW DIRECTOR, NAVY NURSE CORPS

On 29 April 1966, the Navy Surgeon General, VADM Robert B. Brown, delivered the oath of office to the new director, CAPT Veronica M. Bulshefski, Nurse Corps, U.S. Navy. She is the eleventh director to be appointed since the Corps was established by Congress in May, 1908. Her appointment is for a period of four years.

A native of Ashley, Pennsylvania, CAPT Bulshefski graduated from the Hospital School of Nursing, University of Pennsylvania and is a recipient of a Baccalaureate Degree in Nursing Education from Indiana University. She also holds the distinction of being the first Navy nurse to be awarded a Master of Science Degree in Management from the Naval Post Graduate School, Monterey, California.

The new director was appointed in the Nurse Corps of the U.S. Navy in January, 1940 and reported to the U.S. Naval Hospital, Brooklyn, New York for duty. Promotions followed in the grade of Lieutenant (junior grade) in March, 1943; Lieutenant in April 1946; Lieutenant Commander in January, 1952; and Commander in October, 1958. She was selected for a promotion to Captain in September, 1965 and was appointed in that rank as she was sworn in as Director.

CAPT Bulshefski's military career includes extensive administrative assignments prior to and following World War II. Overseas assignments of the new Director include duty at the Naval Hospitals, Pearl Harbor and Base Hospital #8, Hawaii during World War II and as Chief of Nursing Service at Guam, Mariana Islands in the post war period. She has also served as Chief of Nursing Service at the Naval Hospitals Beaufort, South Carolina; and Jacksonville and Pensacola, Florida. At the time of her selection as Director by the Secretary of the Navy, she was serving as Chief of Nursing Service at the Naval Hospital, Oakland, California.

In addition to membership in the professional nursing organizations, CAPT Bulshefski is a member of the Indiana University Alumni Association and the Pi Lambda Theta Honorary Society. Her

service awards include the National Defense Service Medal, the American Theatre Medal, World War II Medal, and the Asiatic Pacific Campaign Medal.

CAPT Bulshefski brings to the Directorate a wealth of knowledge and experience in administration of nursing services, personnel management and research techniques. She has also authored and co-authored articles for the professional nursing bulletins. The new Director will commence on 1 May to oversee and direct the activities of 2,000 Navy Nurse Corps officers who are serving all over the world.

TO THE NURSE CORPS OFFICERS OF THE U.S. NAVY AND NAVAL RESERVE

On 1 May 1966 I will conclude my tenure as Director of the Navy Nurse Corps and my naval career of thirty years. This special day will be observed with sentiments of certain regrets but with accompanying feelings of pride, appreciation and satisfaction. I have been privileged to serve as your director, and I value this treasured milestone, the highlight of my professional career.

Foremost in my mind today are memories of the challenge and demands entrusted to the Nurse Corps during these recent years. I am fully aware of the responsibilities inherited as a result of the nurse shortage, the events of a national conflict, and the increasing needs evident in all patient care areas. Each of you responded readily and willingly to your expanding roles and capably and admirably fulfilled all expectations. This bond of strength and dedicated effort has been a source of continuing inspiration and comfort to me. It also typifies the esprit de corps that has been prevalent throughout this period and is very much in evidence today.

I am equally proud of the accomplishments of the members of the Corps in these past four years. There have been progressive improvements of nursing service administration and nursing practice at our medical activities located throughout the world. This has contributed to the excellence of nursing care provided to our patients and typifies the dedication, the professional proficiency and the leadership ability of the members of the Nurse Corps. We have also witnessed the expansion of our education programs and observed increasing opportunities for professional advancement of our officers. All have been of benefit to our patients, our members, the Navy and the Corps.

To each of you, I earnestly express my warm appreciation for your individual contributions, your

dedication and your remarkable record of progress. I am confident that my successor, CAPT Veronica M. Bulshefski NC USN, will continue to receive your full support and cooperation and will take pride in your accomplishments.

My warmest personal regards and best wishes to all.

s/Ruth A. Erickson
CAPT NC USN

Upon assuming the Office of Director, Navy Nurse Corps, I wish to extend my warm greetings and best wishes to each of you. I am proud and pleased to serve as your Director and welcome this opportunity to communicate directly with you. May this message serve as the beginning of a close communication bond between us.

In this anniversary month of May, we examine with pride our heritage—the Navy Nurse Corps. We renew once again our pledge to contribute our talents and efforts to peace, patient care, and progress. We also reflect with pride on the milestones in the colorful history of the Nurse Corps, the leadership ability of its present and former members and their achievements through the years.

I also view with pride the present members of the Corps in their expanding roles. I am especially grateful for your loyal support, your individual contributions, and your distinguished record of service. I am equally proud of your willingness to subordinate your personal desires to the needs and welfare of the military man and his family. This dedication of service and proficiency of our members has characterized our Corps since its establishment and has served a vital role in maintaining the traditionally high standards of the nursing profession and the naval service.

May we together experience the challenges and satisfactions of future fruitful years.

Thank you one and all for a JOB WELL DONE.

s/Veronica M. Bulshefski
CAPT NC USN
Director, Navy Nurse Corps

A SALUTE TO THE OFFICERS OF THE NAVY NURSE CORPS

On the 58th anniversary of the Navy Nurse Corps, I extend with pleasure my congratulations and heartiest wishes to all members of the Corps.

This historical occasion provides opportunity to express appreciation to each of you for the splendid support and assistance you provided to the Medical

Department the past year. During this time you compiled a distinguished record of patriotic and humanitarian service at medical activities overseas, afloat and at home. Your vital expanding roles and dedicated efforts have indeed contributed to our team effort to accomplish our mission.

I am certain the success that has marked the progress and achievements of the Nurse Corps in the past 58 years will serve as a prologue to continuing accomplishments in future years.

s/R. B. Brown
Vice Admiral MC USN
Surgeon General

RECEPTION HONORING DIRECTOR NAVY NURSE CORPS

Sprays of cherry blossoms and green decked halls set the stage on 22 April for the Navy Nurse Corps' reception in honor of their retiring Director, CAPT Ruth A. Erickson.

Among the distinguished guests attending were the Navy's Surgeon General, Vice Admiral and Mrs. R. B. Brown, Vice Admiral and Mrs. George G. Burkley, the newly designated director, CDR Veronica M. Bulshefski, and the Corps' former directors—CAPT Ruth Houghton Tayloe, CAPT Winnie Gibson Palmer and CAPT Nellie Jane DeWitt. Over 600 associates and friends attended the reception.

NMRI STAFF MEMBER NAMED AEROSPACE MEDICAL ASSOCIATION'S "WOMAN OF THE YEAR, 1966"

CDR Elizabeth Reeves MSC USN, Head, Section of Immersion Stress, Environmental Stress Division, Physiological Sciences Department, Naval Medical Research Institute, was named Aerospace Medical Association's "Woman of the Year, 1966" at the 37th annual meeting held in Las Vegas, Nevada, on 20 April. This honor was bestowed for her outstanding leadership and achievement in aviation and physiological research.

Miss Reeves, a native of Portland, Oregon, joined the Navy in 1943 and her first assignment after Officer Indoctrination School was to the School of Aviation Medicine, Naval Air Station, Pensacola, Florida, to complete a course in aviation physiology

and to train in the operation of the low pressure chambers and other special devices in order to train flight personnel in the physiological problems of high altitude flying and in the use of oxygen equipment. Later, during her tour of duty at the Aviation Medical Acceleration Laboratory, Naval Air Development Center, Johnsville, Pennsylvania, she took an active part in the research preparation for testing and training of the first team of astronauts in their flight programs and in the problems of the effects of weightlessness in space. Miss Reeves might well be called a pressure physiologist for her work has been not only in low pressure and high altitude flying, but also in high pressure and the Navy's deep diving program. In her present assignment at NMRI, she was a member of the team that established the criteria for the heated suits which were worn by the aquanauts of Sealab II and she has also established the duration of immersion time tolerated by subjects under various conditions for survival at sea.

Miss Reeves received her training at the Oregon State College and the University of Pennsylvania and is presently doing research on the factors relating to decompression sickness from positive pressure and the subsequent treatment.—Public Affairs Office, NNMC, Bethesda, Md.



CDR Elizabeth Reeves MSC USN, "Woman of the Year, 1966"—Official U.S. Navy Photograph.

**POSTGRADUATE SHORT COURSES FOR MEDICAL DEPARTMENT OFFICERS
SPONSORED BY THE DEPARTMENT OF THE ARMY DURING FISCAL YEAR 1967**

The following postgraduate professional short courses will be conducted by the Army Medical Service during Fiscal Year 1967. Eligible Medical Corps, Dental Corps and Nurse Corps officers, are those who meet the criteria prescribed by BUMED INSTRUCTION 1520.8 Series; Manual of the Medical Department 6-130; and BUMED INSTRUCTION 1520.14 Series, respectively. Eligible Medical Service Corps officers are those who are currently assigned to billets with a direct relationship to the

courses listed and should apply in accordance with BUMED INSTRUCTION 1520.12 Series. Officers desiring to attend should submit their requests in ample time to reach the Bureau at least 8 weeks prior to the convening date of the course desired. This lead time is necessary in order to comply with the Army's request to return unused quotas 6 weeks in advance of the convening dates of the courses listed.

<u>COURSES</u>	<u>INSTALLATION</u>	<u>DATE</u>
Ophthalmic Pathology	Armed Forces Institute of Pathology	25-29 Jul 1966 MC
Advanced Military Preventive Medicine	Walter Reed Army Institute of Research	1 Aug-29 Oct 1966 MC - NC
Armed Forces Examining Station (AFES) Examiners Course	Medical Field Service School, Brooke Army Medical Center	8-12 Aug 1966 6-9 Sep 1966 MC
Nineteenth Annual Symposium on Pulmonary Disease	Fitzsimons General Hospital	12-16 Sep 1966 MC
Trends in Dental Laboratory Activities	U.S. Army Institute of Dental Research, Walter Reed Army Medical Center	26-30 Sep 1966 DC
Orthopedic Pathology	Armed Forces Institute of Pathology	26 Sep-4 Nov 1966 MC
Postgraduate Course in Prosthodontics	Letterman General Hospital	3-7 Oct 1966 DC
Army Health Nursing	Walter Reed Army Institute of Research	10-14 Oct 1966 NC
Forensic Dentistry	Armed Forces Institute of Pathology	10-14 Oct 1966 DC
Armed Forces Obstetrics and Gynecology Seminar	Fitzsimons General Hospital	24-27 Oct 1966 MC
Preventive Dentistry	U.S. Army Institute of Dental Research, Walter Reed Army Medical Center	24-28 Oct 1966 DC
James C. Kimbrough Urological Seminar	Walter Reed General Hospital, Walter Reed Army Medical Center	31 Oct-3 Nov 1966 MC
Introduction to Research Methods	Armed Forces Institute of Pathology	31 Oct-4 Nov 1966 MC
Present Concepts in Internal Medicine	Letterman General Hospital	1-4 Nov 1966 MC

<u>COURSES</u>	<u>INSTALLATION</u>	<u>DATE</u>
Advanced Course in Aerospace Pathology	Armed Forces Institute of Pathology	15-17 Nov 1966 MC
Postgraduate Course in Restorative Dentistry	Letterman General Hospital	5-9 Dec 1966 DC
Prosthodontics	U.S. Army Institute of Dental Research, Walter Reed Army Medical Center	5-9 Dec 1966 DC
Oral Surgery	U.S. Army Institute of Dental Research, Walter Reed Army Medical Center	9-13 Jan 1967 DC
Application of Histochemistry of Pathology	Armed Forces Institute of Pathology	16-20 Jan 1967 MC
Neuropathology	Armed Forces Institute of Pathology	23-27 Jan 1967 MC
Social and Preventive Psychiatry	Walter Reed Army Institute of Research	23-27 Jan 1967 NC
Ophthalmic Pathology	Armed Forces Institute of Pathology	6-10 Feb 1967 MC
Periodontics	U.S. Army Institute of Dental Research, Walter Reed Army Medical Center	13-17 Feb 1967 DC
Surgical and Orthopedic Aspects of Trauma	Brooke General Hospital	27 Feb-3 Mar 1967 MC-NC
Tri-Service Pediatric Seminar	Walter Reed Army Institute of Research	1-3 Mar 1967 MC
Advanced Pathology of the Oral Regions	U.S. Army Institute of Dental Research, Walter Reed Army Medical Center	6-10 Mar 1967 DC
Pathology of the Oral Regions	Armed Forces Institute of Pathology	13-17 Mar 1967 DC
Advanced Military Nursing	Medical Field Service School, Brooke Army Medical Center	13-24 Mar 1967 NC
Annual AFIP Lectures, 1967	Armed Forces Institute of Pathology	20-24 Mar 1967 MC
Symposium on Current Surgical Practices	Walter Reed General Hospital, Walter Reed Army Medical Center	3-5 Apr 1967 NC-MS
Postgraduate Course in Oral Surgery	Letterman General Hospital	3-7 Apr 1967 DC
Otolaryngology Basic Science	Armed Forces Institute of Pathology	3 Apr-26 May 1967 MC
Geographic Pathology of Infectious Diseases	Armed Forces Institute of Pathology	10-14 Apr 1967 MC

<u>COURSES</u>	<u>INSTALLATION</u>	<u>DATE</u>
Oral Diagnosis and Therapeutics	U.S. Army Institute of Dental Research, Walter Reed Army Medical Center	10-14 Apr 1967 DC
Forensic Pathology	Armed Forces Institute of Pathology	17-21 Apr 1967 MC
Mental Health Concepts in Nursing	Walter Reed Army Institute of Research, Walter Reed Army Medical Center	17-21 Apr 1967 NC
Occupational Therapy Education Supervisors Course	Walter Reed Army Institute of Research, Walter Reed Army Medical Center	12-14 June 1967 MSC

—Training Branch, BuMed.

ANNUAL COURSE IN ORTHOPEDIC PATHOLOGY

The annual course in Orthopedic Pathology under Doctor Lent C. Johnson, will be offered at the Armed Forces Institute of Pathology in Washington, D.C. from 26 September through 4 November 1966. This course is a recommended part of Navy Orthopedic Residency Training, and it is envisioned that in so far as possible all Navy Orthopedic Residents will attend during their course of residency—usually their third or fourth year. To the limit of funds available, the course is also available for career Navy Orthopedists who have not attended this or a similar program in the past.

Applications should be made through the Chiefs of Orthopedics and hospital Commanding Officers to Chief, Bureau of Medicine and Surgery, Code 316, prior to 1 July for TAD funds and orders.

—Training Branch, BuMed.

NAVY AND MARINE CORPS MEDAL AWARDED

The President of the United States takes pleasure in presenting the Navy and Marine Corps Medal to

Patrick E. Boole
Hospital Corpsman Third Class
United States Navy

for service as set forth in the following CITATION:
For heroism on the afternoon of 3 September 1965

while serving on board the USS SHANGRI-LA (CVA-38). Upon being called to the scene of an accident where a shipmate had fallen unconscious in a void which contained insufficient oxygen for survival, Boole unhesitatingly descended into the hypoxic void without the aid of safety equipment and succeeded in effecting the rescue of the victim. Through his prompt and courageous actions in the face of great personal risk, Boole undoubtedly saved a shipmate from certain death. His determined and inspiring efforts were in keeping with the highest traditions of the United States Naval Service.

For the President,

s/Paul H. Nitze

Secretary of the Navy

MILITARY NURSING SYMPOSIUM FOR RESERVE NURSE CORPS OFFICERS

The Military Nursing Symposium for Reserve Nurse Corps Officers will be held 1-12 August 1966 at the National Naval Medical Center, Bethesda, Maryland. This year's agenda is entitled "Nursing Implications in Current Military Operations."

Reserve Nurse Corps Officers who wish to attend this two weeks Reserve ACDUTRA should submit applications to the District Commandants via the proper chain of command and the Medical Programs Officer.—Reserve Div, BuMed.

DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
WASHINGTON, D.C. 20390

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with serving on board the USS SHANAHAN (LST-1167) during the Vietnam War. He was assigned to the ship in 1967 and served until 1970. During his tour of duty, he was promoted to the rank of Lieutenant (jg) and served as the ship's medical officer. He was also assigned to the ship's medical department and was responsible for the medical care of the crew and passengers. He was awarded the Navy and Marine Corps Medal for his service on the ship.

For the President

Paul H. Nitze

Secretary of the Navy

NAVY MEDICAL NEWS LETTER FOR
RESERVE NAVY OFFICERS

The Military Training Institute for Reserve Officers (MTRI) is a program of the Department of the Navy that provides training and education for reserve officers. The MTRI is located at the Naval Postgraduate School in Monterey, California. It is a two-year program that provides training in various fields of study, including medicine, surgery, and dentistry. The MTRI is a highly respected institution and is a valuable resource for reserve officers. The MTRI is a part of the Naval Postgraduate School and is a part of the Department of the Navy. The MTRI is a highly respected institution and is a valuable resource for reserve officers. The MTRI is a part of the Naval Postgraduate School and is a part of the Department of the Navy.

ANNUAL CONGRESS IN ORTHOPEDIC
PATHOLOGY

The annual congress in orthopedic pathology is a highly respected institution and is a valuable resource for orthopedic pathologists. The congress is held annually in Washington, D.C. and is a part of the American Society of Orthopedic Pathology. The congress is a highly respected institution and is a valuable resource for orthopedic pathologists. The congress is held annually in Washington, D.C. and is a part of the American Society of Orthopedic Pathology. The congress is a highly respected institution and is a valuable resource for orthopedic pathologists. The congress is held annually in Washington, D.C. and is a part of the American Society of Orthopedic Pathology.

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NAVY AND MARINE CORPS MEDAL
AWARDED

The President of the United States has awarded the Navy and Marine Corps Medal to Paul H. Nitze for his service on the ship. The medal is a highly respected institution and is a valuable resource for reserve officers. The medal is awarded annually in Washington, D.C. and is a part of the American Society of Orthopedic Pathology. The medal is a highly respected institution and is a valuable resource for orthopedic pathologists. The medal is held annually in Washington, D.C. and is a part of the American Society of Orthopedic Pathology.

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